MASTER’S P.U COLLEGE, HASSAN, 573201.

KCET ONLINE TEST-35, MAY-2020  **MATHEMATICS**  **TIME: 45Mins MARKS: 30**

**TOPIC**: **1st ALGEBRA, LIMITS. DATE: 08/06/2020**

**KEY**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| **D** | **B** | **A** | **C** | **A** | **B** | **C** | **B** | **C** | **D** | **A** | **B** | **C** | **D** | **D** |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| **B** | **A** | **B** | **B** | **C** | **B** | **C** | **C** | **B** | **C** | **D** | **D** | **B** | **D** | **D** |

**HINTS AND SOLUTIONS**

1. (d) Let the original set contains  elements, then subsets of this set containing more than *n* elements, *i.e.*, subsets containing  elements,  elements, …….  elements.

∴ Required number of subsets



.

1. (b) ,then, total number of subsets of *S* is .

Hence, .

1. (a)  is divisible by *p* for any natural number greater than 1. It is Fermet's theorem.

**Trick :** Let  and 

Then , it is divisible by 2. So, it is true for any natural number greater than 1.

1. (c) (mod 5);(mod5)  *i.e.*  (mod 5) (mod 5)

 (mod 5),  Least positive remainder is 2.

1. (a) The equations, corresponding to inequalities  and , are  and . So the lines represented by these equations are parallel. Hence the graphs are disjoint.

3*x+*2*y*=6

6*x+*4*y*=20

(2,0)

(3,0)

(10/3,0)

(0,5)

*Y*

*X*

*O*

1. (b) It is obvious.
2. (c) Required sum.

[If we fix 3 of the unit place, other three digits can be arranged in  ways similarly for 4, 5, 6.]

1. (b) The 4 odd digits 1, 3, 3, 1 can be arranged in the 4 odd places in  ways and 3 even digits 2, 4, 2 can be arranged in the three even places in  ways. Hence the required number of ways .
2. (c)  

.

1. (d) Each question can be answered in 4 ways and all questions can be answered correctly in only one way, so required number of ways .
2. (a) 

= .

1. (b) 

 ⇒  ⇒ 

 

  .

1. (c)  Conjugate .
2. (d) The equation  ⇒  ⇒ .
3. (d) We have  ⇒   

But for  is not meaningful. Hence it has no root.

1. (b) The given series **** terms



Putting , we get .

1. (a) ****

 .

1. (b) As,  and  are in A.P.

Therefore, 

As  cannot be negative, hence  or .

1. (b) Let four numbers are .

Now  and 

Thus required numbers are 1, 3, 5, 7. Hence greatest number is 7.

1. (c)  

+.........

Given, *m – n* = 3 or *n* = *m* – 3

Hence ⇒ 

⇒ ⇒ 

1. (b) We have  ⇒ 

Differentiating both sides with respect to *x*, we get

= 

Putting , we get



1. (c) 



Therefore the required sum of coefficients



**Note :** = Sum of all the binomial coefficients in the 2nd bracket in which all the powers of *x* are even.

1. (c) Using L-Hospital's rule, .
2. (b)  .
3. (c) , 

Using L-Hospital’s rule three times, then





.

1. (d) .
2. (d)  

**Trick :** Using L Hospital’s rule.

1. (b) 



, .

1. (d) 

.

1. (d) In closed interval of *x* = 0 at right hand side [*x*] = 0 and at left hand side  Also [0]=0. Therefore function is defined as 

∴Left hand limit 



Right hand limit = 0. Hence limit doesn't exist.